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at the outside, result in the extermination of this very obnoxious and embarrassing pest."

*"Temperature control.*—The possibility of temperature control is indicated in the discussion elsewhere of the effect of temperature on this insect. A temperature maintained below freezing for 10 or 15 days destroys the eggs, and this temperature continued for 15 days to a month will destroy the newly hatched young. It may be, therefore, that if infested houses in cold climates should be opened up and allowed to remain at a temperature well below freezing for a considerable period, all eggs and the young, and possibly most if not all of the adults, would be exterminated. This method of control might perhaps be practicable at least in the case of summer houses in the North which are left untenanted in the winter.

"The maintaining of high temperatures may be an even more efficient method of control. The activity of the bedbug is at its greatest between 60° and 70° to 75°. As indicated elsewhere, in a temperature of 96° to 100° F., accompanied with a high degree of humidity, newly hatched bedbugs perish within a few days, and, if this temperature is raised to 113° F., in a few minutes.<sup>3</sup> A temperature of 113° will also destroy the eggs, and with these higher temperatures the item of humidity is not apparently important."

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### VACCINATION AND SMALLPOX MORTALITY.

The following account of a smallpox outbreak in Glasgow, Scotland, is taken from The Medical Officer, London:<sup>1</sup>

"Early in September the medical officer of health dealing with smallpox in Glasgow reported that since the outbreak began 477 patients have been admitted to hospital—459 from within the city and 18 from adjoining areas. Of the cases, 128 were children under 15 years of age, of whom 98 were unvaccinated, while the remaining 30 had been vaccinated in infancy. Attention is again drawn to the difference in severity of the disease in these two groups, vaccinated and unvaccinated children. None of those who had been vaccinated in infancy have died, while 32 of the unvaccinated died, a death rate among unvaccinated children of 33 per cent. Among the 349 patients in the group aged 15 years and over, 9 were unvaccinated, 6 of whom died. Evidence of previous vaccination was doubtful in 6, 2 of whom died. Of the remaining 334 patients vaccinated in infancy, 54 have died.

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<sup>3</sup> EDITORIAL NOTE.—An account of successful use of live steam to eradicate bedbugs in bunkhouses, as practiced by a lumber company in Oregon, was published in Public Health Reports, Nov. 28, 1919, pp. 2713-2714. In that instance steam pipes were tapped, after closing all doors and windows, and a temperature of 160° F. was held for approximately 3 hours. The officials of the company stated that 2 months after the steaming no signs of bedbugs had been found.

<sup>1</sup> Public Vaccination Service Notes, The Medical Officer, Oct. 23, 1920, p. 6.

"The relationship between vaccinated state and mortality may be set forth as follows:

	Number of cases.	Deaths.	Mortality rate.
			<i>Per cent.</i>
Vaccinated in infancy.....	364	54	15
Unvaccinated.....	107	38	35
No definite evidence of successful vaccination.....	6	2	33
	477	94	20

"The relative excess of mortality among the unvaccinated therefore continues. It may be added that so far no cases have occurred among the medical, nursing, or administrative staff engaged in dealing with patients."

Dr. W. McConnel Wanklyn, a vigorous antismallpox fighter in England, has made exhaustive studies, both clinical and administrative, on smallpox over a long period of time, and the following cardinal principles have dominated his antismallpox campaign: "(1) Inform the public of the risk they are running; (2) make the fullest use of routine vaccination; (3) push vaccination in an outbreak of smallpox and very promptly; and (4) emphatically, let the authorities be constantly on the alert." <sup>2</sup>

### PUBLIC HEALTH ENGINEERING ABSTRACTS.

**Experience with Imhoff tanks in Minnesota.**—J. A. Childs, Engineer, Division of Sanitation, Minnesota State Board of Health, St. Paul, Minn.—*Municipal and County Engineering*, Vol. LIX, No. 5, November, 1920, p. 162.

The first Imhoff tank in Minnesota was constructed in 1911. Since then 40 municipal and institutional tanks have been installed, together with two or three hundred Imhoff tanks used in the treatment of school-building sewage. The earlier designs were patterned after German constructions, but it was soon found that the sludge chamber capacity was not large enough, owing to the long, cold winters in Minnesota, which retarded the action of the sludge. The State board of health now requires a minimum capacity, below the settling compartment slots, of 2 cubic feet per capita tributary to the system, which eliminates this difficulty.

A properly designed Imhoff tank must not be regarded as an automatic piece of apparatus, but should receive intelligent care to give the best results, as has been demonstrated in Minnesota. For the average Minnesota municipality, there seems to be no type of

<sup>2</sup> Public Vaccination Service Notes, The Medical Officer, Oct. 23, 1923, p. 6.